

T. C. JOY.  
Steam-Boilers.

No. 209,895.

Patented Nov. 12, 1878.

Fig. 1.

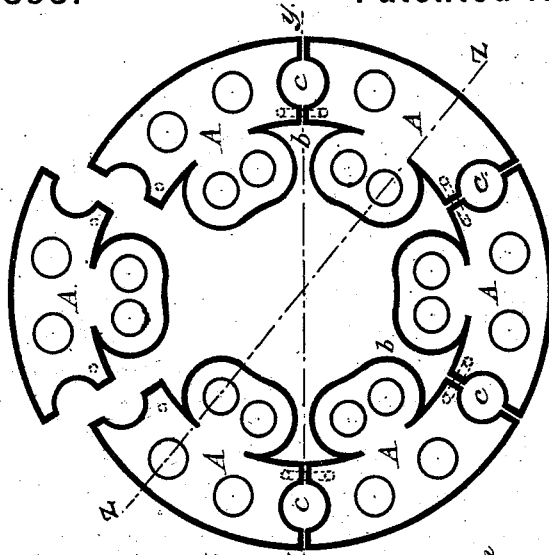


Fig. 2.

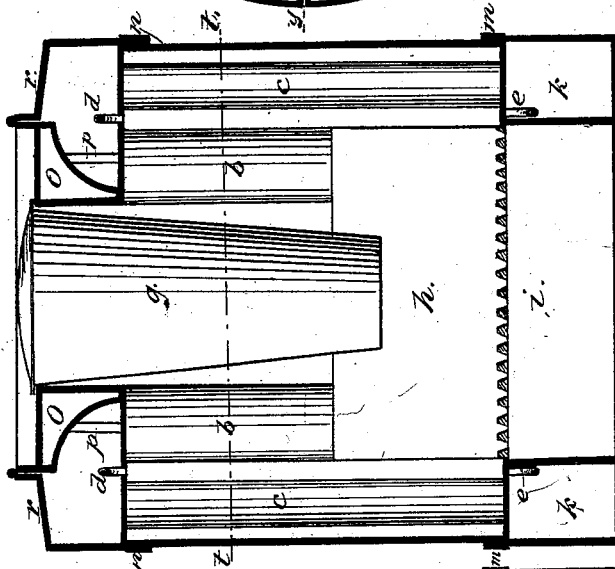
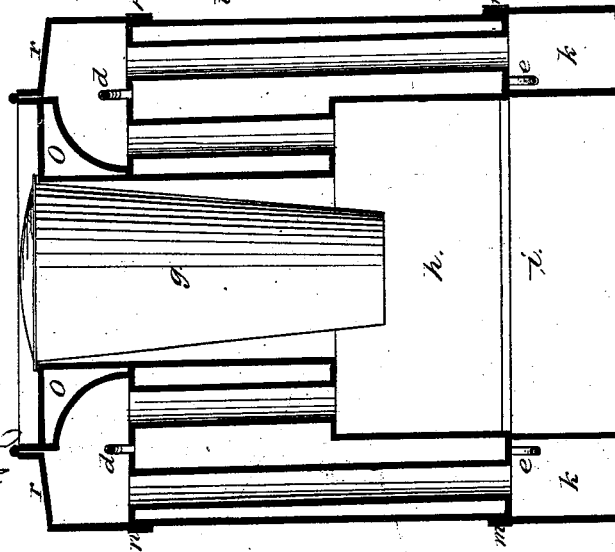


Fig. 3.



Witnesses:

*C. B. Follmer*  
*J. A. Conant*

Inventor:

*Thaddeus C. Joy*  
*By Joseph Smith*  
*att'y.*

# UNITED STATES PATENT OFFICE.

THADDEUS C. JOY, OF TITUSVILLE, PENNSYLVANIA.

## IMPROVEMENT IN STEAM-BOILERS.

Specification forming part of Letters Patent No. **209,895**, dated November 12, 1878; application filed May 20, 1878.

*To all whom it may concern:*

Be it known that I, THADDEUS C. JOY, of Titusville, Crawford county, Pennsylvania, have invented an Improved Sectional Vertical-Tube Steam-Boiler, of which the following is a specification:

My invention relates more particularly to boilers used for steam-heating purposes, carrying but light pressure, and not requiring constant attention; the object being to construct it in vertical sections or segments, each segment easily removed, but together forming a vertical-flue boiler, with opening in the center for a fuel-reservoir.

In the drawing, Figure 1 represents a horizontal section on line *t t*, Fig. 2. Fig. 2 illustrates a vertical section on line *y y*, Fig. 1; and Fig. 3, a vertical section on line *z z*, Fig. 1.

The same letters indicate like parts in all the figures.

*A A* are the sections or segments. Each section is provided on each side with semicircular grooves, so placed that when put together the grooves form the direct flues *b b* and the return-flues *c c*, for the passage of the flame and heat.

The sections, when together, are connected by the steam-pipes *d d* and the water-pipes *e e*, the opening in the center being left for the supply-reservoir *g*.

*h* is the fire-chamber; *i*, the ash-pit; *k*, the smoke-box, connected with the smoke-stack or chimney.

The sections, when in place, are held by the hoop *m* on base, and *n* on top. Other devices, as bolts and clamps, &c., may be used for connecting the segments, if desired.

Additional direct and return flues may be inserted in the segments, if desired, as indicated in Fig. 1.

*O* is an annular ring or steam-dome, the under side being concave, and serving the purpose of a deflection-plate over the direct flues. The steam being admitted through the pipes *p p* is still further heated from the direct flues.

*r r* are lids or doors, either hinged or removable. These can be raised or removed at any time when the boiler is in use, and the top of the boiler or flues cleaned.

When any one of the sections or segments *A* becomes defective it can easily be removed and replaced by a perfect segment.

I claim as my invention—

1. The combination, in a vertical steam-generator, of the removable segments or sections *A*, each section being provided with a semicircular groove, which, when the sections are united, forms a fire-tube, the sections being held together by hoops *m n*, substantially as shown and described.

2. The combination, in a vertical sectional steam-generator, of the segments or sections *A A*, steam-dome *O*, the under side of which forms a deflecting-plate, as herein described, and the hinged tops or lids *r r*, constructed and arranged to operate substantially as set forth.

3. A vertical steam-generator the sections of which are provided with semicircular grooves, forming, when united, direct and return flame-tubes, the annular steam-dome *O*, central magazine or reservoir, *g*, and the water and steam pipes *d* and *e*, substantially as described and shown.

THADDEUS C. JOY.

Witnesses:

ANDREW B. HOWLAND,  
HENRY C. BOSLEY.